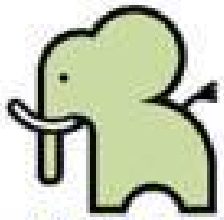
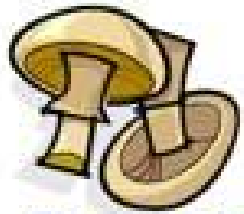




ANIMAL PLANTS FUNGI BACTERIA PROTISTS

Single cell
No nucleus

Single cell +
nucleus

FLOWERING NON-FLOWERING

INVERTEBRATES

VERTEBRATES

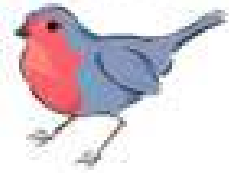
ARTHROPODS

fish amphibian reptile bird mammal

insect spider






9 sources of ENERGY

VERTEBRATES (backboned)

COLD BLOODED

WARM BLOODED

Water Gills

Wet scales

Water Gills → Land Lungs

Damp skin

Land Lungs

Dry scales

Land Lungs

Land Lungs

Give birth to live young

Hair/fur

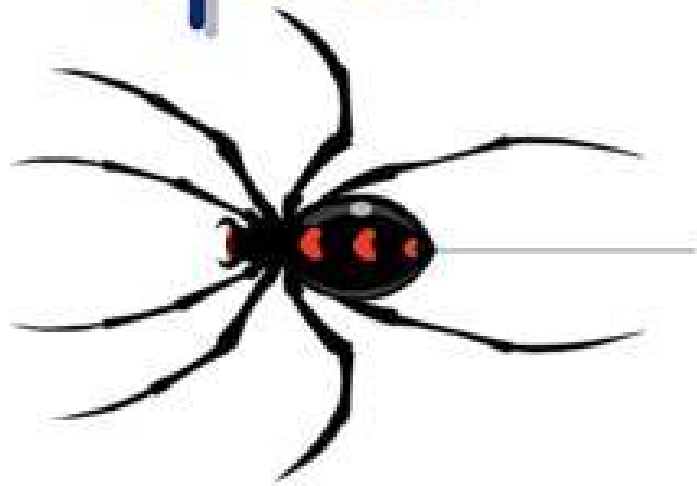
Feed young with milk

INVERTEBRATES (NO backbone)

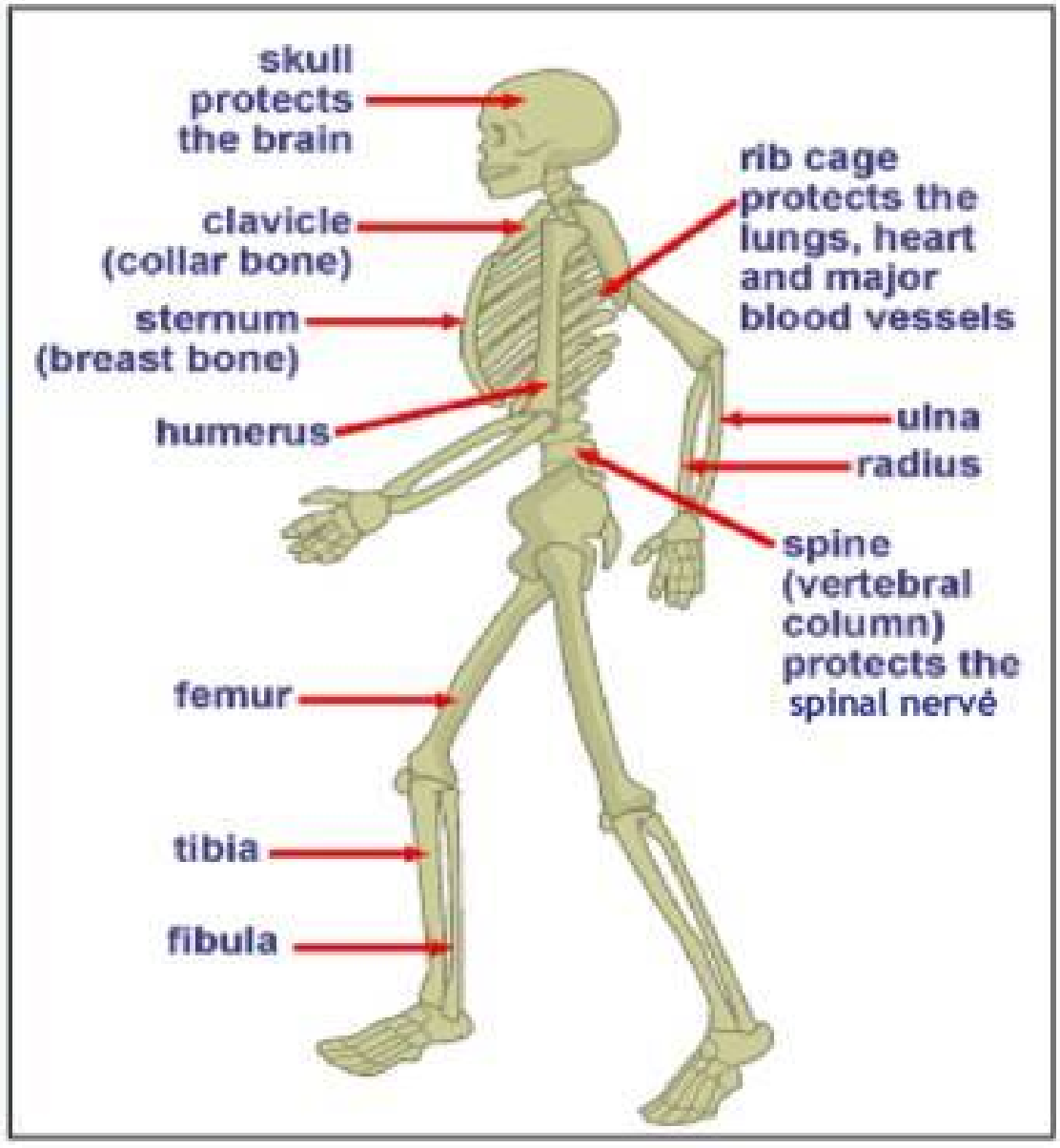
insect

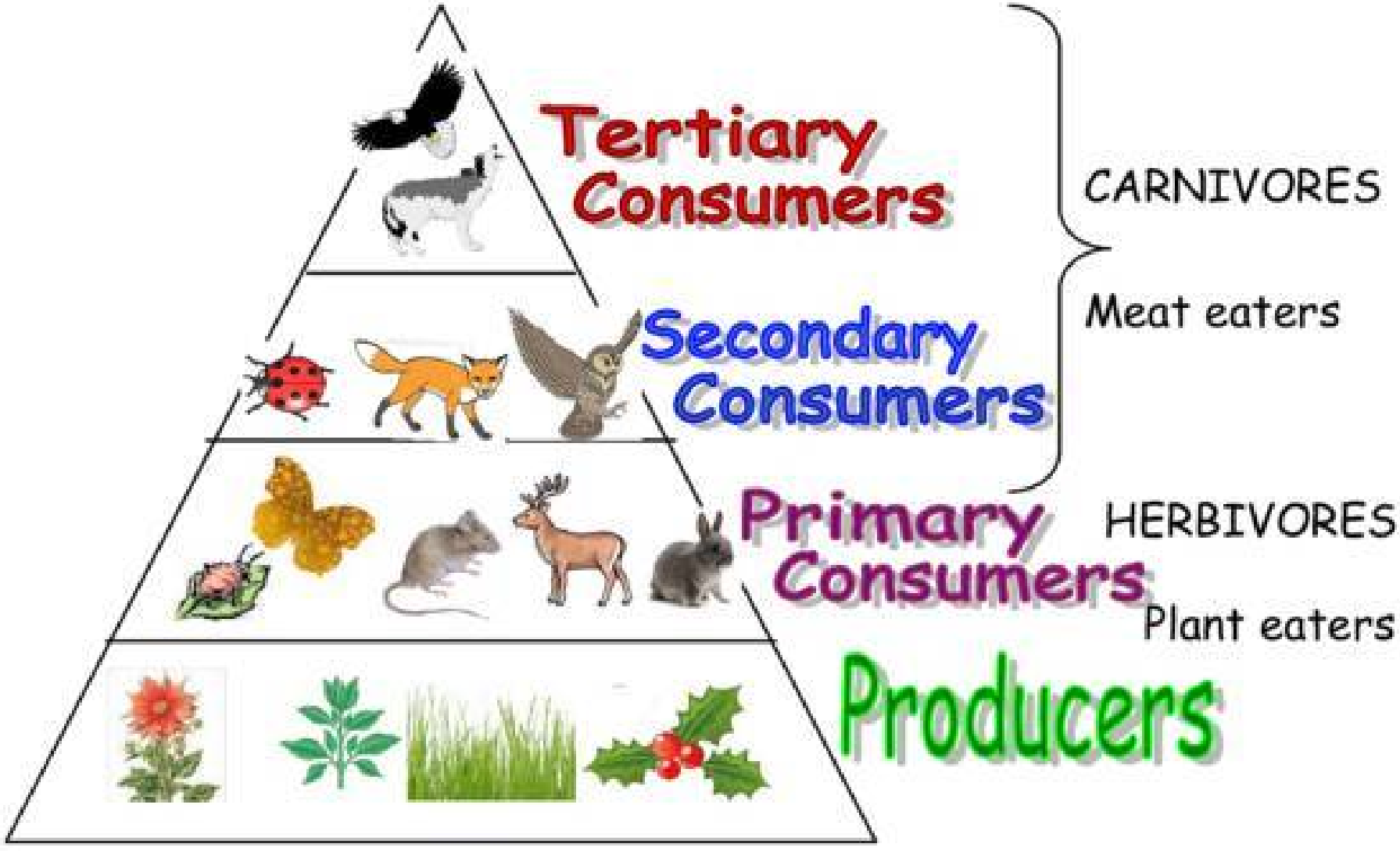
3 main body parts
6 legs
Usually wings

spider



2 main body parts
8 legs
No wings

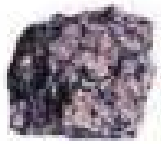

skull
protects
the brain
clavicle
(collar bone)
sternum
(breast bone)
humerus
rib cage
protects the
lungs, heart
and major
blood vessels
ulna
radius
spine
(vertebral
column)
protects the
spinal nerve
femur
tibia
fibula


Tertiary Consumers
Secondary Consumers
Primary Consumers
Producers
CARNIVORES
Meat eaters
HERBIVORES
Plant eaters

ROCKS

Igneous

Cooled Magma



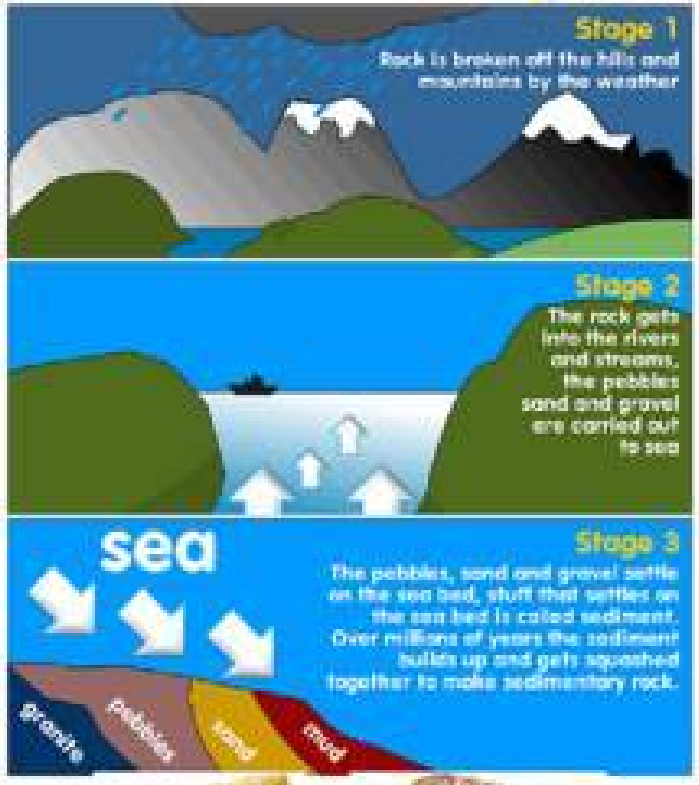
GRANITE

Cooled Inside earth's crust

BASALT

Expelled from volcano and cooled

Sedimentary



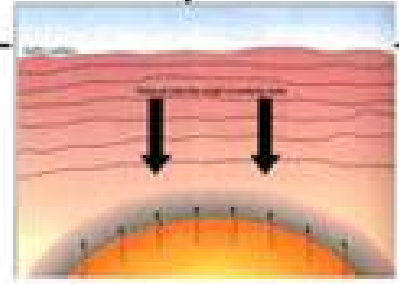
LIMESTONE

SANDSTONE

Crumbly- may contain fossils

Metamorphic

Sedimentary or igneous rocks that have been altered by heat and/or pressure



SLATE

MARBLE

PRODUCER *All plants are producers. They use the Sun's energy to produce food energy*

HERBIVORE *Animals which only eat plants*

CONSUMER *All animals are consumers*

PRIMARY CONSUMER *An animal which eats Producers (plants)*

SECONDARY CONSUMERS *Eat primary consumers*

TERTIARY CONSUMERS *Eat Secondary consumers*

CARNIVORES *Eat only animals, never plants*

TOP CARNIVORE *Is not eaten by anything else*

OMNIVORE *eats both plants and animals*

Reactivity Series

P
S
C
M
A
Z
I
L
C
S
G

A metal higher in the series will displace a less reactive metal from its compound

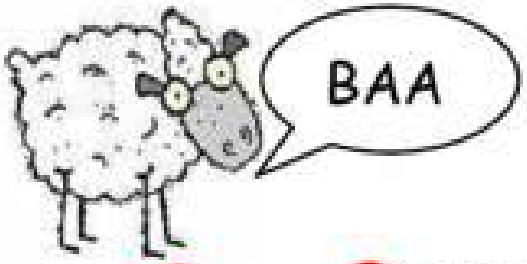
eg: Potassium + Copper Sulphate →

Potassium Sulphate + Copper

Magnesium + Copper Oxide

Magnesium Oxide + Copper →

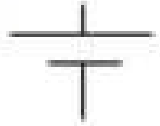
BUT Sodium Oxide + Copper NO CHANGE



Energy cannot be made or destroyed, only transferred

S Sound 

H Heat 

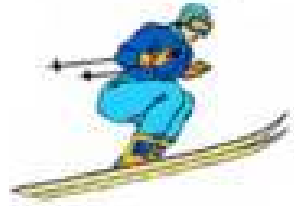
E Electrical 

E Elastic (mechanical potential) 

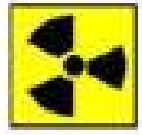
P Potential (gravitational potential)

C Chemical 

M Movement 



L Light 

N Nuclear 

Forces

Balanced Forces = no movement

Unbalanced forces= change of speed/ direction

FORCES MAKE OBJECTS:

Speed up 

Slow down 

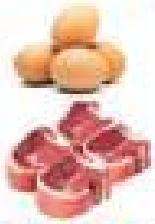
Change direction 

Turn 

Change shape eg twisting 

A Balanced Diet

PROTEIN



Growth Repair

CARBOHYDRATE

Energy

FATS

Energy

VITAMINS

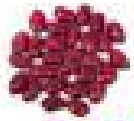
A B C D

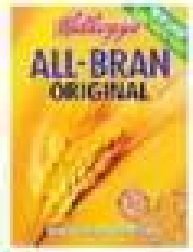
MINERALS

Calcium teeth/bones

Iron blood

FIBRE



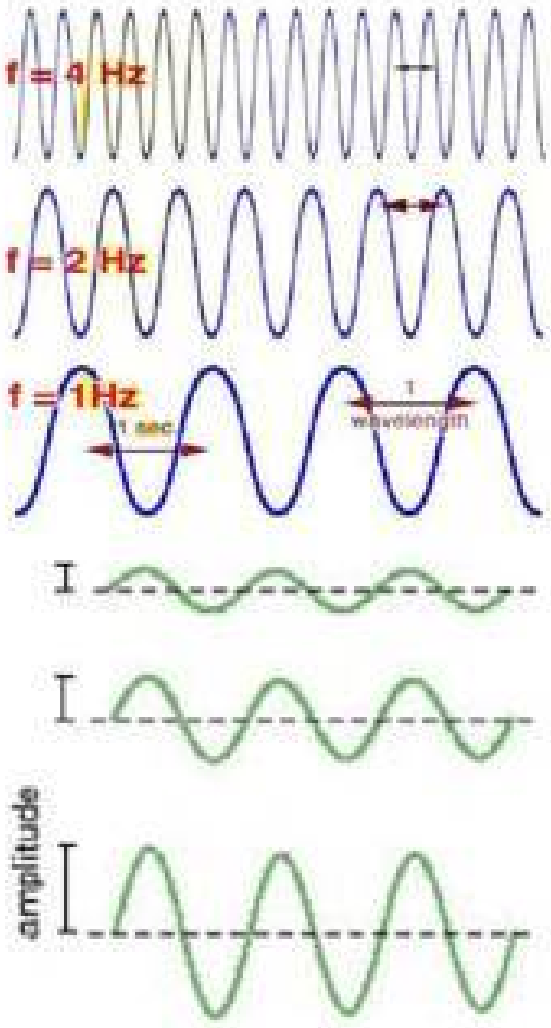


Digestion

WATER

75% of our body.

Sound



FREQUENCY (Hertz- Hz)

lots of vibrations per second= high frequency – a high pitch sound

few vibrations per second= low frequency - low pitch sound.

AMPLITUDE (Amps)

A tall wave is a loud sound

A short wave is a soft sound

Acid + Base → Salt + Water

Acid + Alkali → Salt + Water

Acid + Metal → Salt + Hydrogen

Acid + Carbonate → Salt + Water + Carbon Dioxide

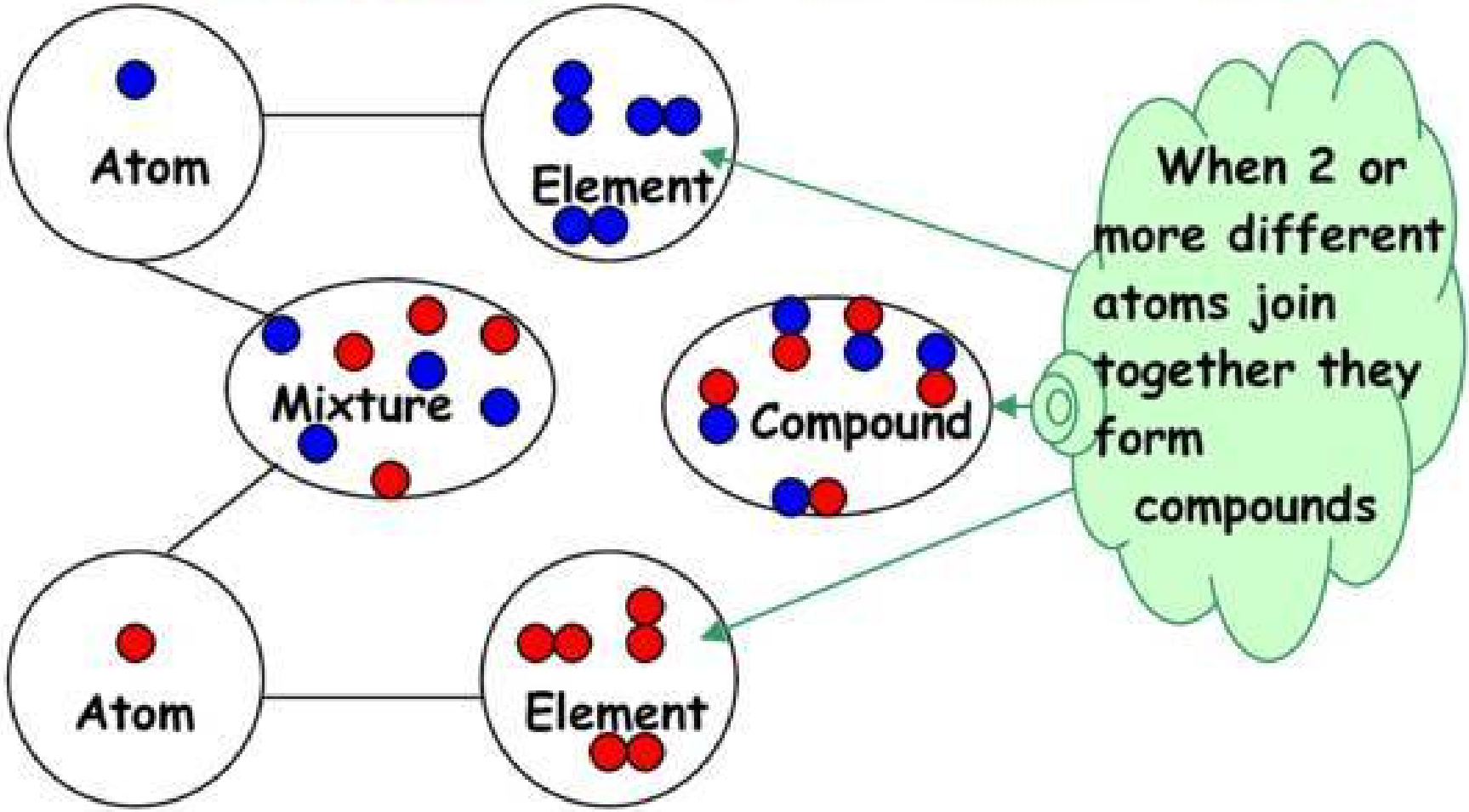
NOTE: BASES are the OXIDES & HYDROXIDES of metals

Sulfuric Acid → SULFATE salt

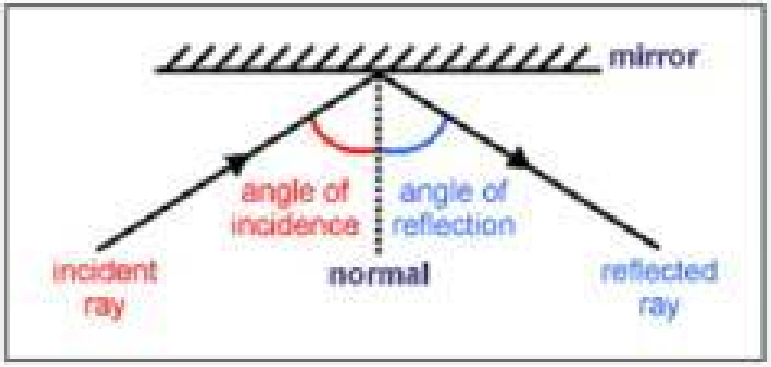
Hydrochloric Acid → CHLORIDE salt

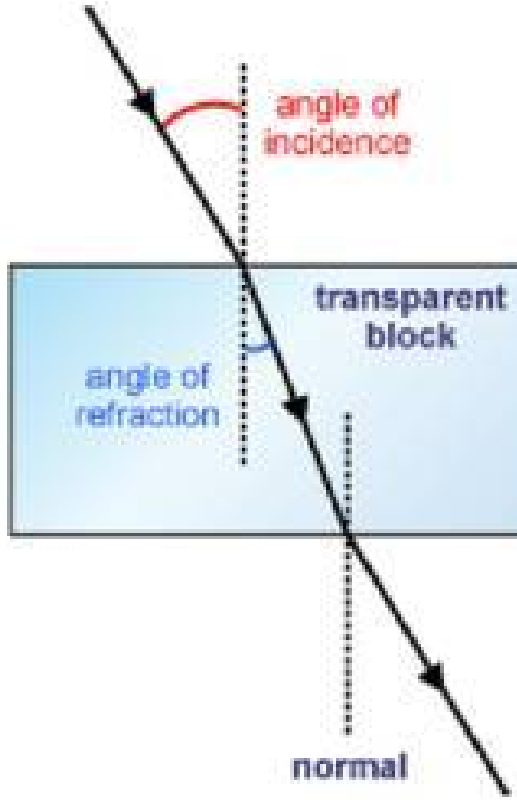
Nitric Acid → NITRATE salt

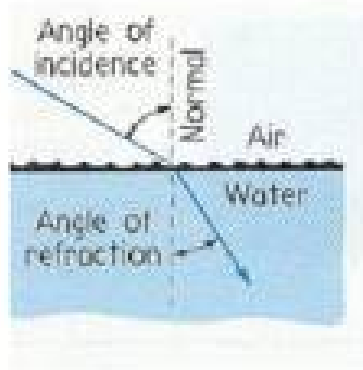
ATOMS, ELEMENTS & COMPOUNDS



Light







LAW OF REFLECTION

Angle of Incidence=
Angle of Reflection

LAW OF REFRACTION

Light going to a more dense medium bends to the normal
Light leaving it bends away from the normal

ELECTRICITY

Battery/cell 

Bulb 

Switch 

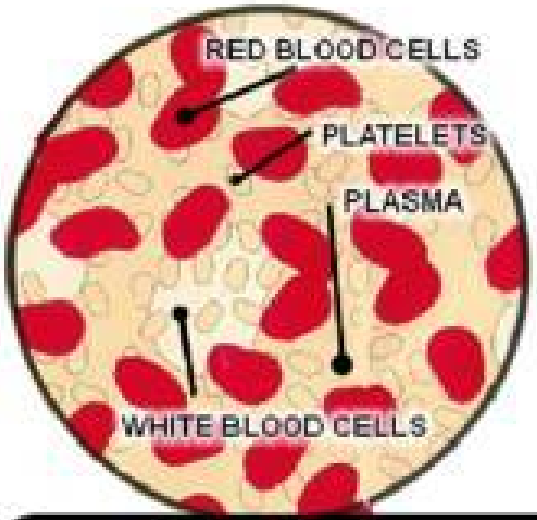
Ammeter 

Variable resistor 

Voltmeter 

Motor 

The 4 Parts of Blood



Red Cells Carry Oxygen

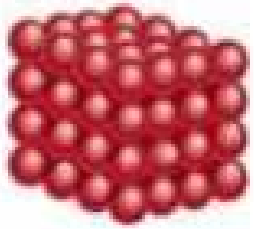
WHITE CELLS Kill invading microbes

PLASMA- liquid containing salt, sugar, proteins

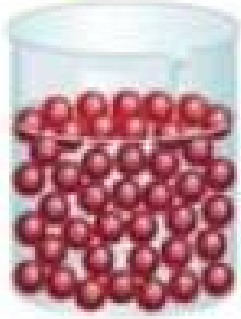
PLATELETS-form clots to stop bleeding

PARTICLE THEORY

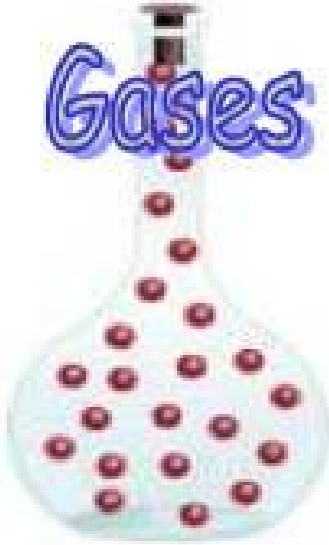
Solids



Liquids



Gases



PARTICLES

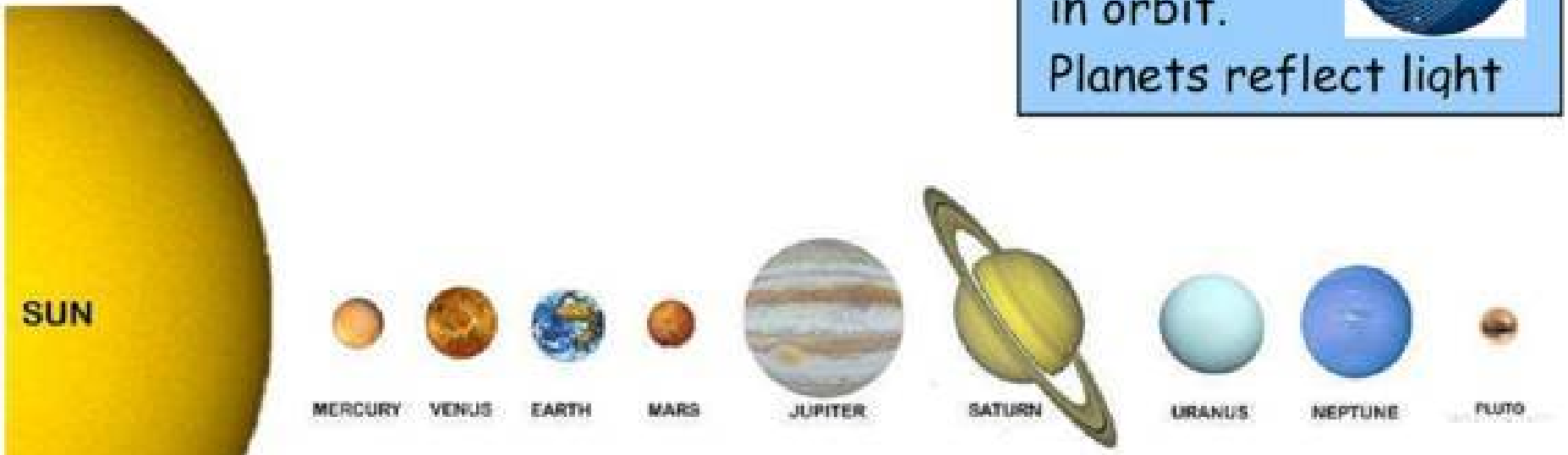
Solids	Liquids	Gases
Tightly packed In fixed position	Packed closely Move around (in liquid)	Far apart Move around quickly (anywhere)

TRICKY WORDS

Atom	Smallest part of an element. Lots of the same atoms make an element.
Molecule	When atoms join together they form molecules
Element	A substance only made up of one type of atom
Compound	A substance made up of two or more elements
Mixture	A mixture of different elements or compounds (can be separated)

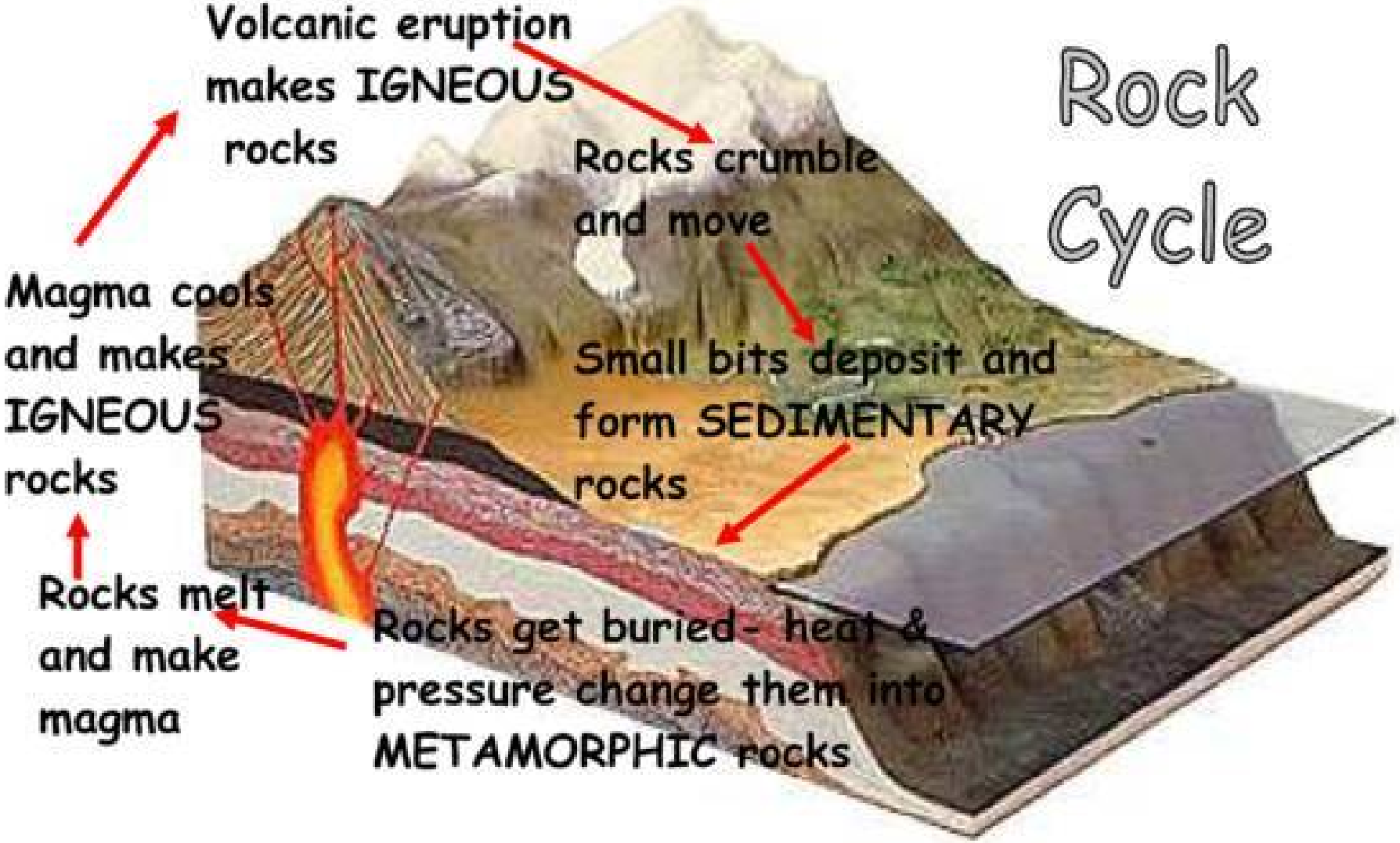
The Planets

Planets orbit the Sun. Gravity keeps them in orbit. Planets reflect light

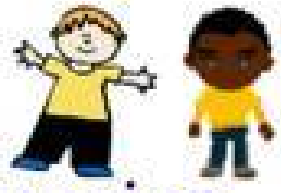


My **V**ery **E**fficient **M**emory **J**ust **S**tores **U**p **N**ine **P**lanets

The Rock Cycle



VARIATION



Different Species

Different genes

Same Species

Same genes

DIFFERENCES

Inherited

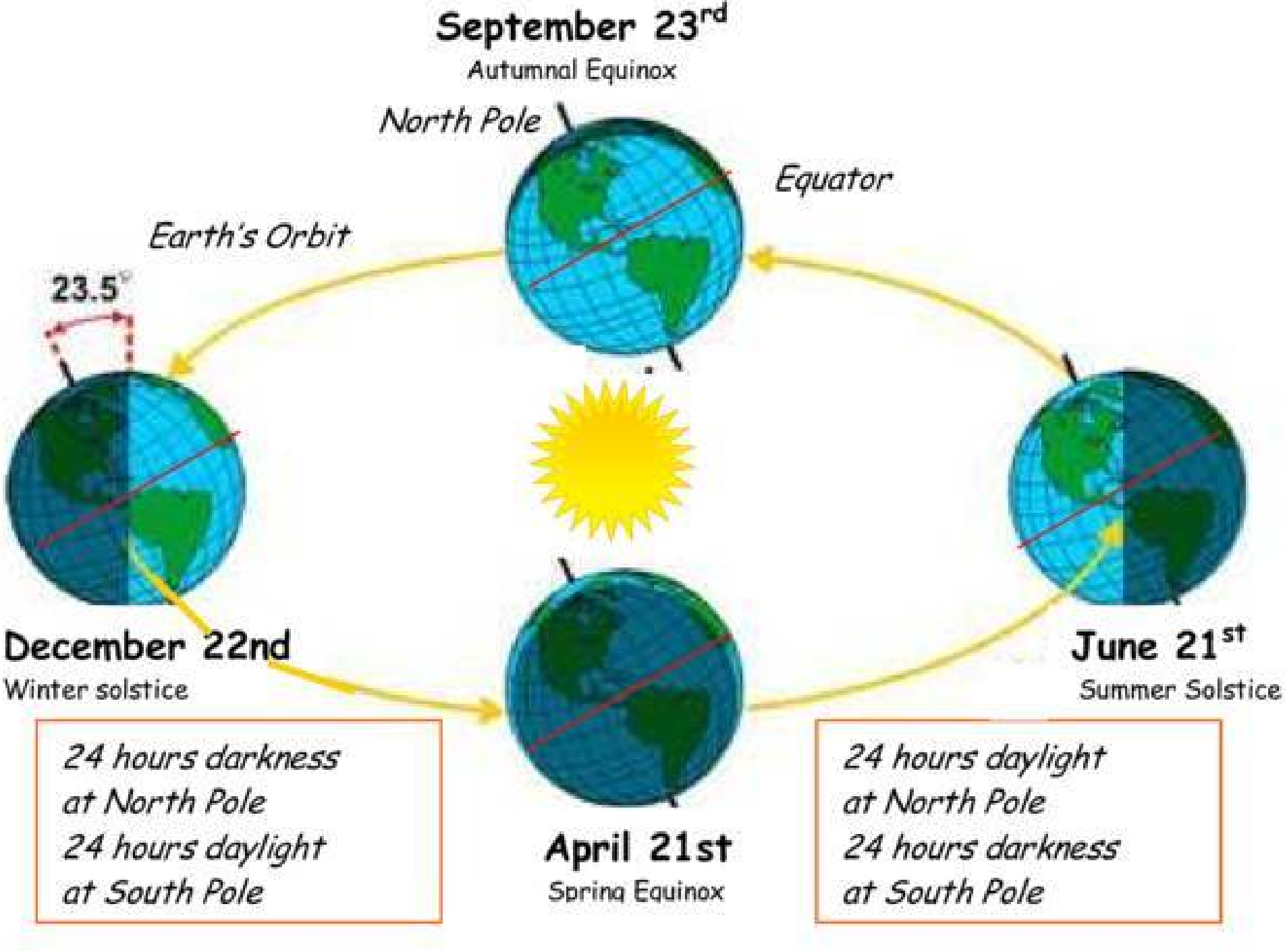
Environmental

Continuous Variation

Range eg IQ
Height, weight

Discontinuous Variation

Few Options eg eye colour
Blood groups


September 23rd
Autumnal Equinox
North Pole
Equator
Earth's Orbit
23.5°
December 22nd
Winter solstice
June 21st
Summer Solstice
April 21st
Spring Equinox
24 hours darkness
at North Pole
24 hours daylight
at South Pole
24 hours daylight
at North Pole
24 hours darkness
at South Pole

Forces

Friction

(2surfaces rub- friction gives grip)

- Air Resistance
- Water Resistance

(makes it difficult to move in water/makes boats float)

Magnetism

(Invisible force, attracting/repelling)

Gravity

(force that makes things fall to the ground)

Upthrust (occurs in air and water)

(air resistance slows down falling items)

Static Electricity

Measure in Newtons

Arrows show direction and strength of force (longer is stronger)

POPULATIONS

A **HABITAT** is the type of area where a plant/animal lives
A **POPULATION** is the total number of the same species living in a particular habitat
A **COMMUNITY** is all the different organisms living in that habitat

How well adapted the species is to its environment

Competition from other species for food water, shelter etc

How many Predators there are and whether they are successful

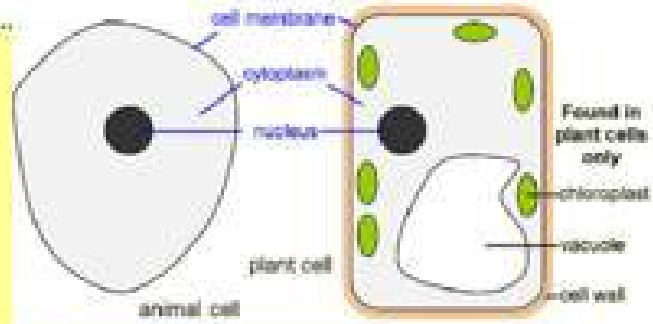
REACTIVITY SERIES

Pure	POTASSIUM
Soap	SODIUM
Can	CALCIUM
Make	MAGNESIUM
A	ALUMINIUM
Zebra	ZINC
Into	IRON
The	TIN
Loveliest	LEAD
Horse	HYDROGEN (Non Metal)
Cows	COPPER
Scoff	SILVER
Grass	GOLD

The Fire Triangle

If you remove one of these factors, the fire goes out

Animal and Plant Cells



NUCLEUS Controls activities of cell

CYTOPLASM Chemical processes take place here

CELL MEMBRANE Controls movement of substances in and out of the cell

Plant Cells only

CELL WALL Strengthens the cell

CHLOROPLAST Contains chlorophyll (for photosynthesis)

VACUOLE Contains cell sap

Microbes

VIRUS

Spread by people
Flu,.....
Chickenpox

BACTERIA

Reproduces
Uncooked/
decaying food

FUNGI

mould
yeast
athletes
foot

MICROBES SURVIVE WOMF

Warmth Oxygen Moisture Food

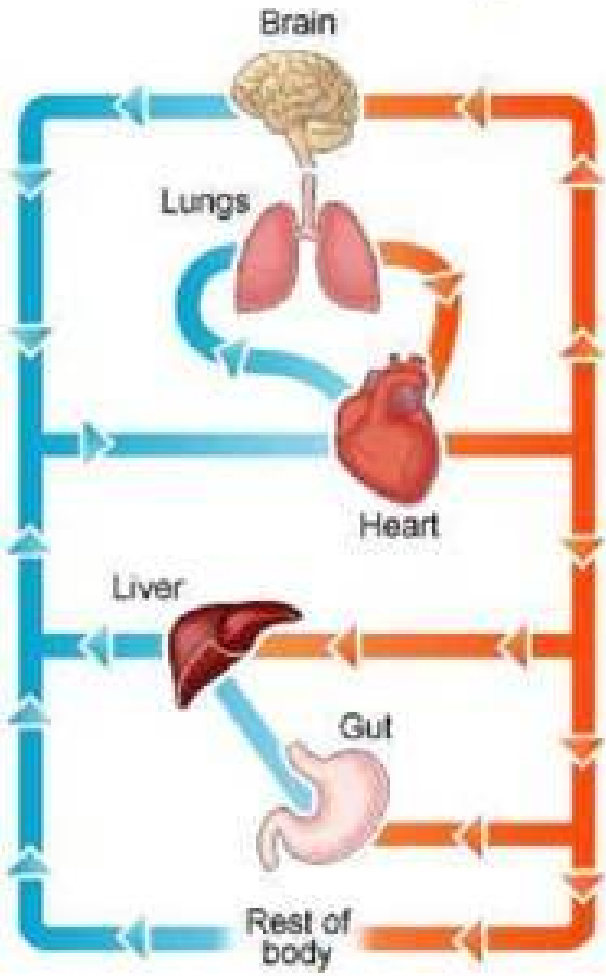
Can be useful!
Break down food
Bacteria for yoghurt
Decomposes leaves

The Circulatory System

VEINS return blood to the heart

Blood in veins

- Carries waste products away from cells
- Is de-oxygenated
- Under low pressure



ARTERIES take blood AWAY from the heart

Arterial Blood

- Carries oxygen/ nutrients to cells
- Is oxygenated
- Under high pressure

plants life cycle

GROWTH

Sun

Rain

CO2

POLLINATION

Pollen carried between plants by

Wind & Insects

GERMINATION

Warmth

Oxygen

Water

WOW

FERTILISATION

Pollen(from Anther) sticks to Sticky Stigma.

Pollen joins ovules in ovary to become seeds (and fruit)

SEED DISPERSAL

Wind

Animals

Birds

Explosion

Acid + Alkali → Salt + Water

Hydrochloric Acid + Sodium Hydroxide → Sodium Chloride + Water

$$HCl + NaOH \rightarrow NaCl + H_2O$$

A bee sting is acid Baking soda
eutralises

A wasp sting is alkali use acid (Vasps

specialised cells

Red Blood Cell

Contains haemoglobin
Carries oxygen round body

White Blood Cell

Produces antibodies to fight disease

Sperm Cell

Tiny, but very mobile because of its tail

Epithelial Cell

In main body tubes (eg.throat/ nose) traps germs and dust)

Nerve Cell

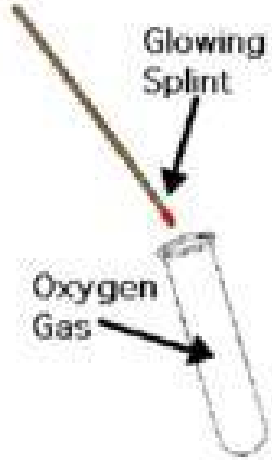
Carries impulses (messages) round body

Egg Cell

Contains massive food resources to develop embryo

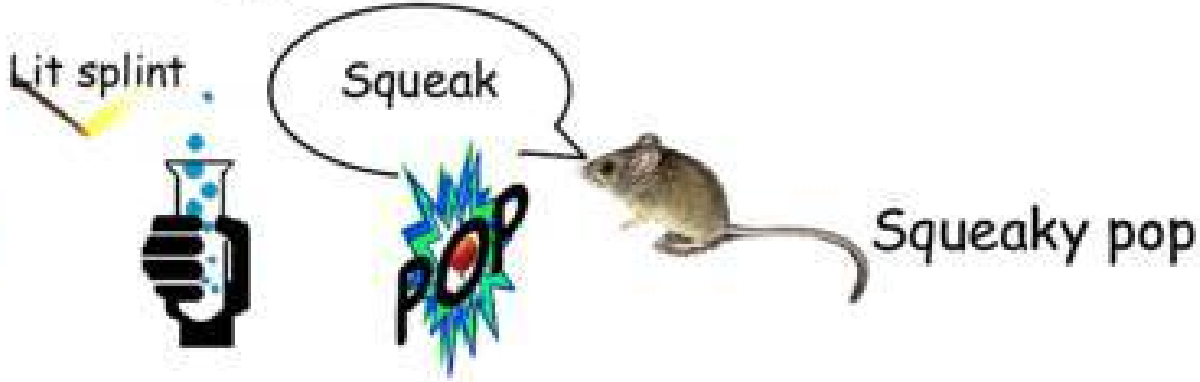
Tests for Gases

Oxygen



Relights a glowing splint

Hydrogen



Carbon Dioxide

Turns lime water cloudy

Solvent

Solute

Solution

Soluble ---------can dissolve

Insoluble --------can not dissolve

Saturated ------nothing more can dissolve

Suspension-------some bits do not dissolve

(eg muddy water)

REACTION OF METALS

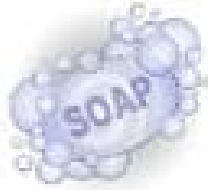
HYDROCHLORIC ACID	produces	CHLORIDE SALTS
SULFURIC ACID		SULFATE SALTS
NITRIC ACID		NITRATE SALTS

pH Scale

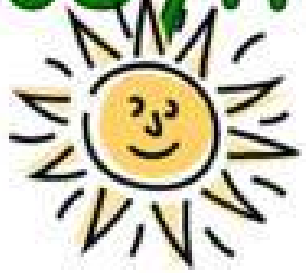
neutral

increasingly acidic

increasingly alkaline



Photosynthesis



CARBON DIOXIDE & WATER

Sunlight

Chlorophyll

GLUCOSE & OXYGEN

The 7 Life Processes

M --- Movement

R --- Respiration

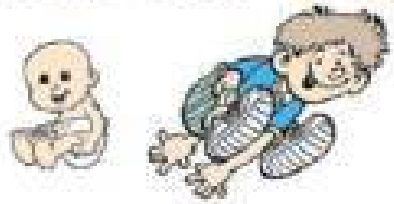
S --- Sensitivity

N --- Nutrition

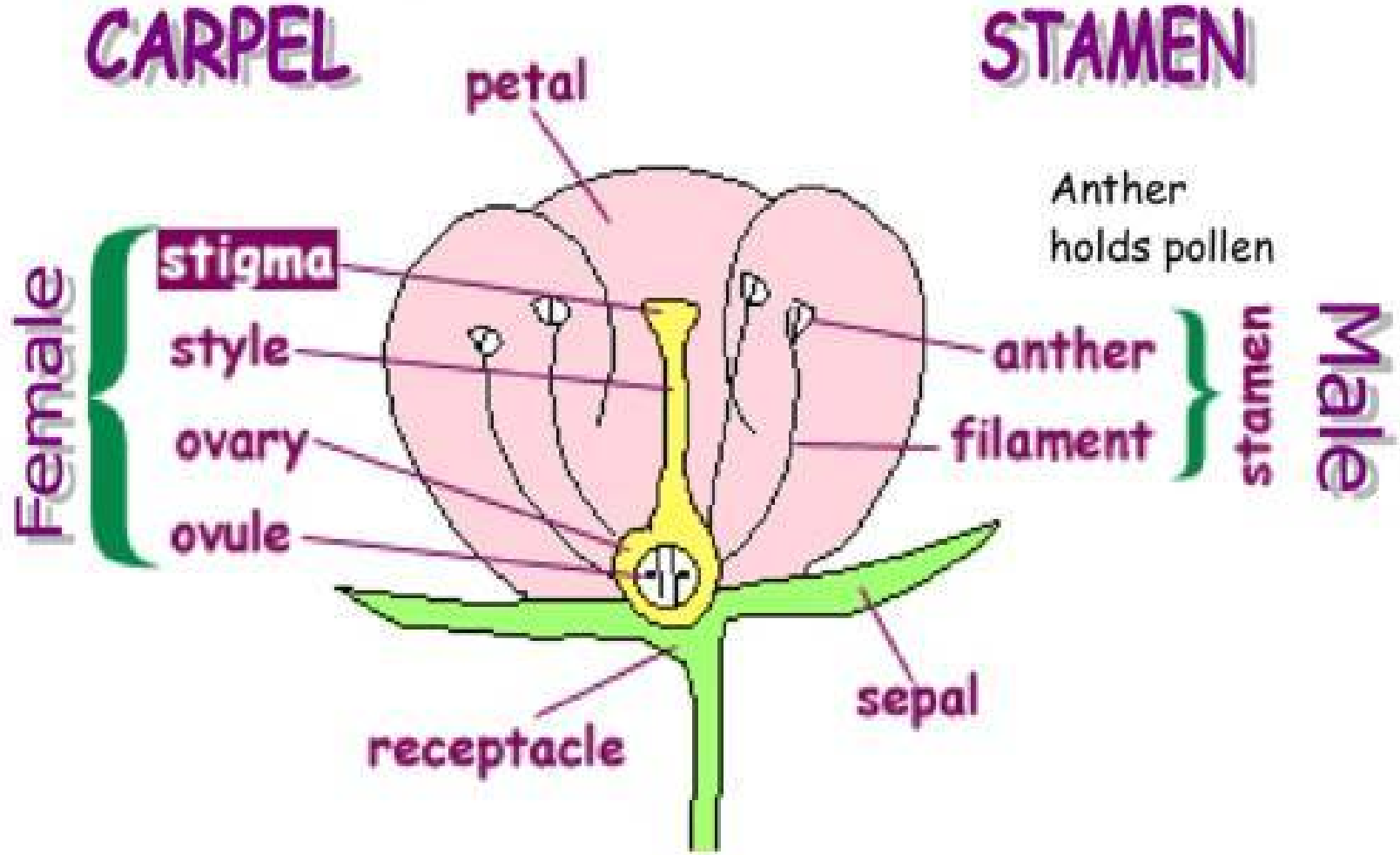
E --- Excretion → Getting rid of waste products

R --- Reproduction

G ---Growth



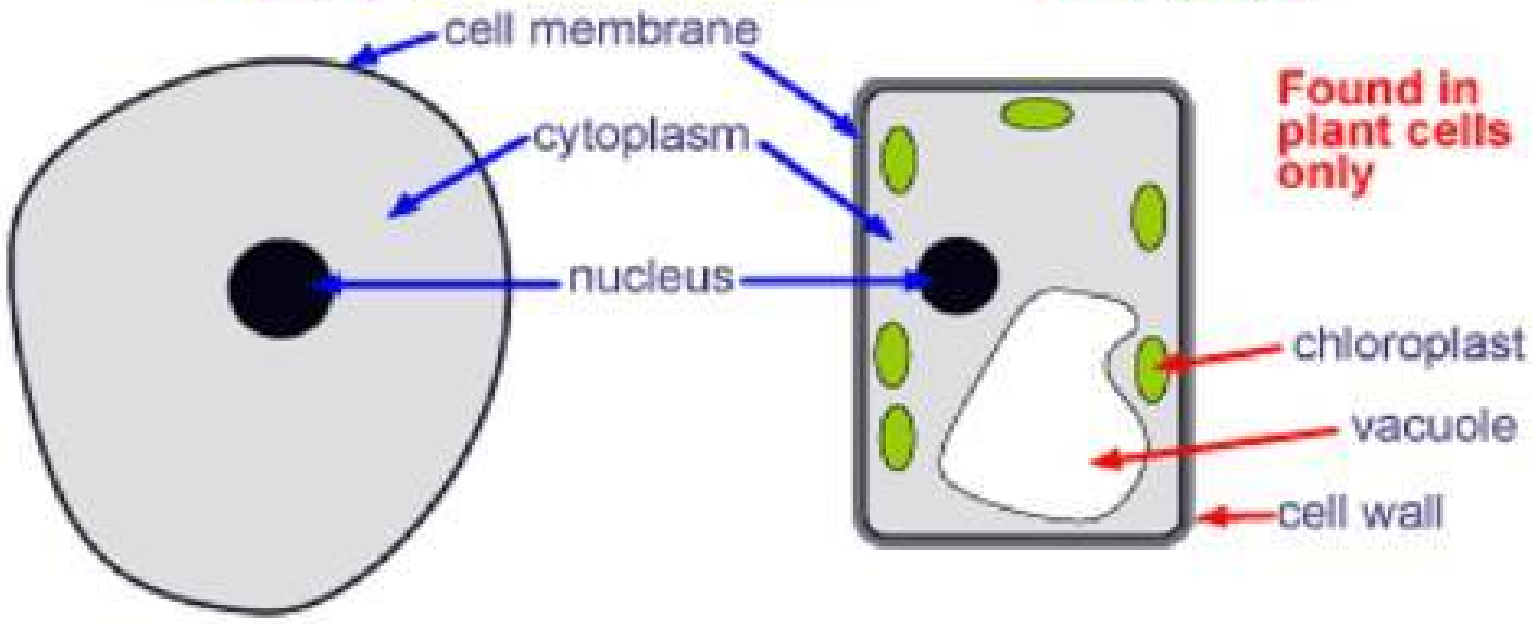
FLOWERS


CARPEL
STAMEN
petal
Anther
holds pollen
Female
stigma
style
ovary
ovule
anther
filament
stamen
Male
sepal
receptacle

ANIMAL CELL

PLANT CELL

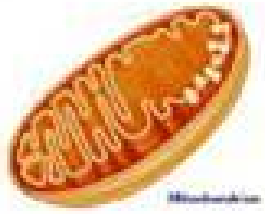
Found in both cells



Animal cell

Plant cell

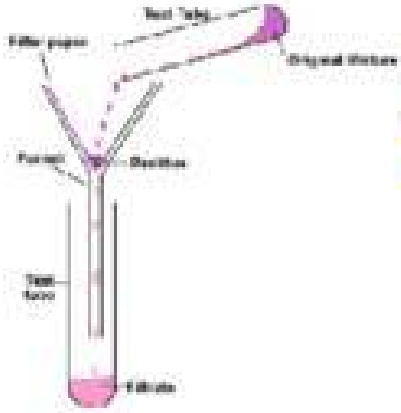
MITOCHONDRIA



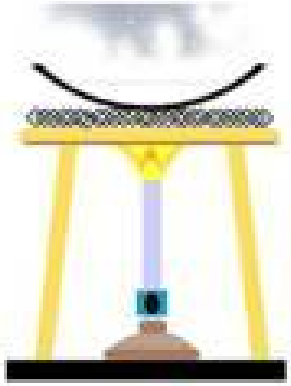
Found in every cell

Smaller than chloroplasts & nucleus

Filtration



Evaporation

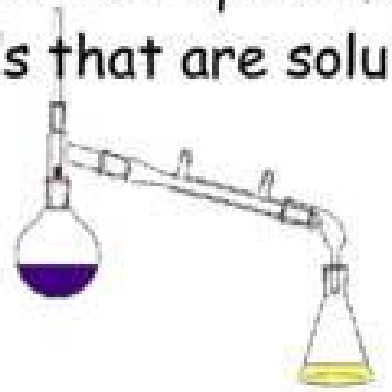


Chromatography

Separates dyes

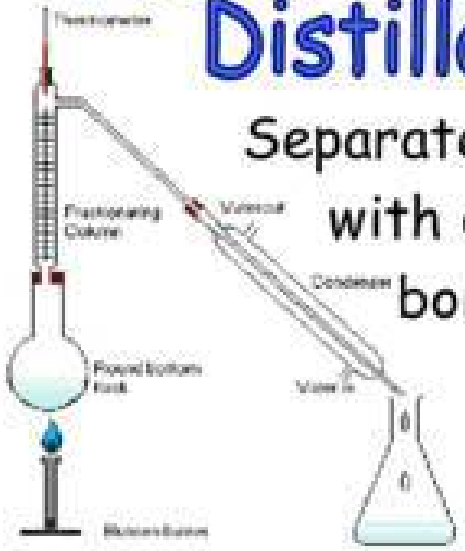
Distillation

Separates liquids from solids that are soluble

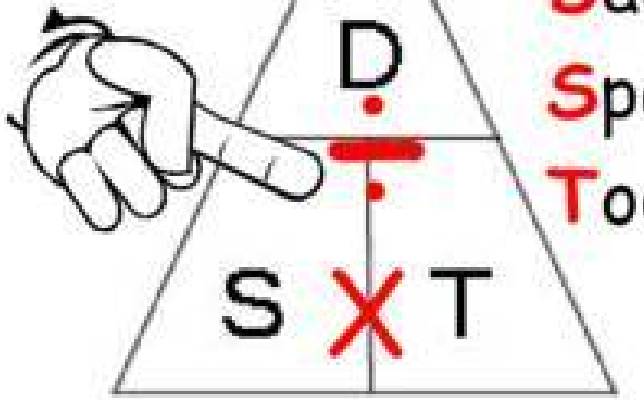


Fractional Distillation

Separates liquids with different boiling points

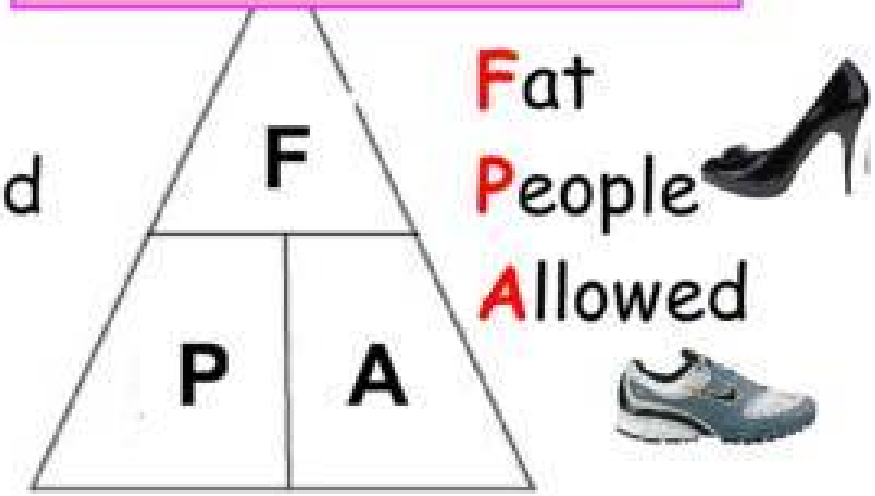


DISTANCE SPEED TIME



Dad
Speeded
Today

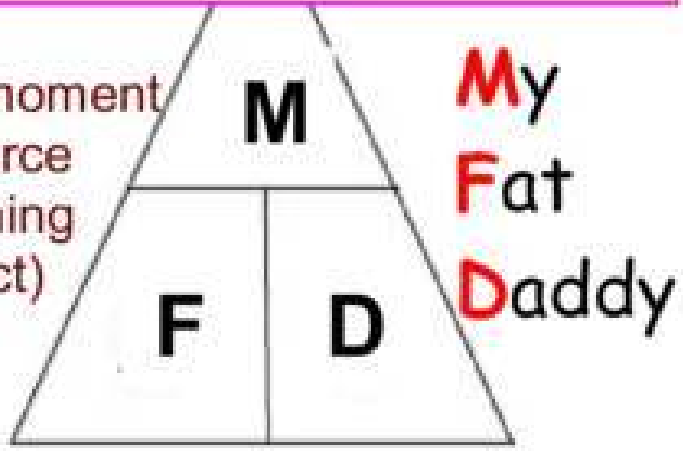
FORCE PRESSURE AREA



Fat
People
Allowed

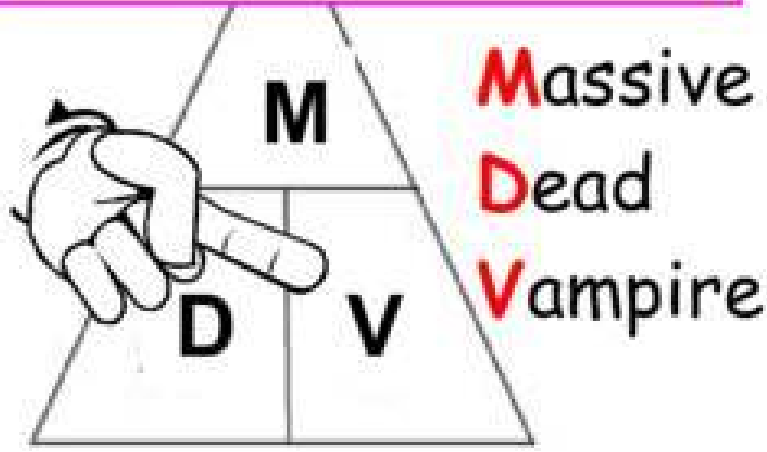
MOMENT FORCE DISTANCE

m=moment of force (turning effect)



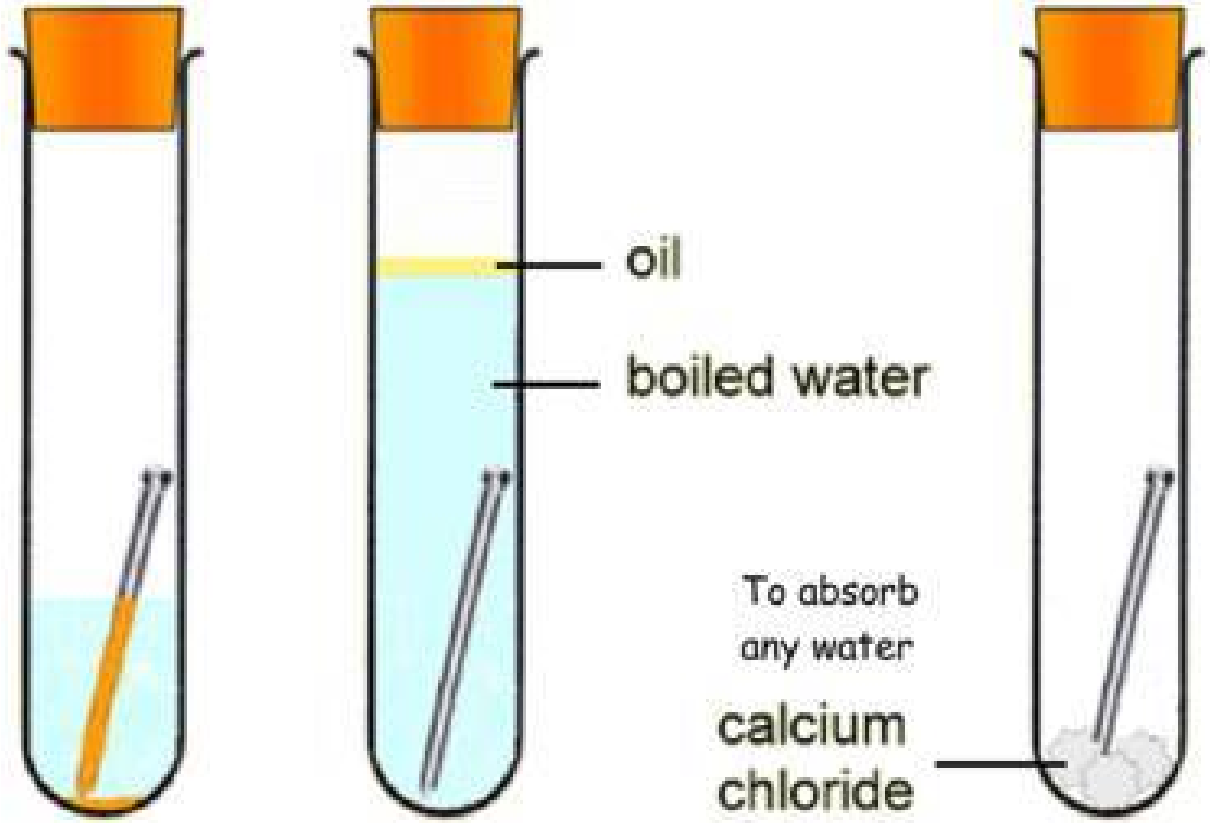
My
Fat
Daddy

MASS DENSITY VOLUME



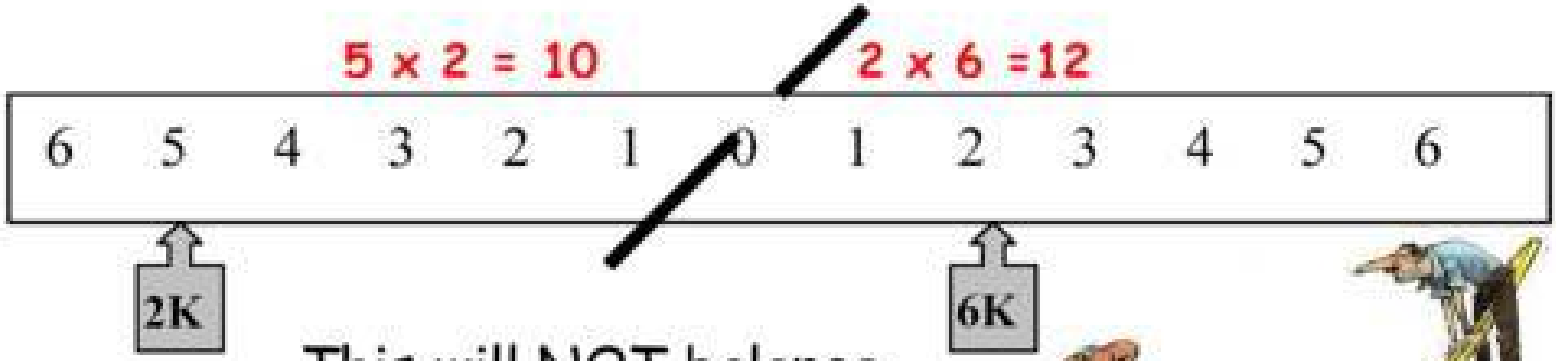
Massive
Dead
Vampire

IRON + WATER + OXYGEN ⟶ IRON OXIDE
(RUST)



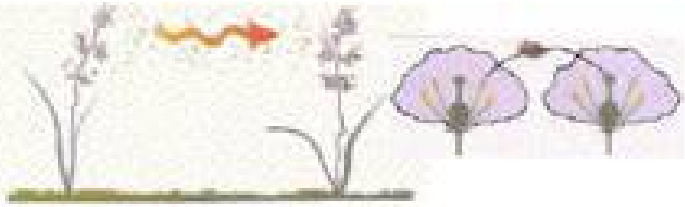
Moment - turning force

Moment = Force X Distance from pivot



PLANT LIFE

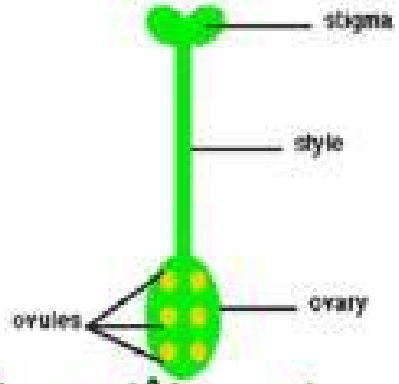
Self-pollination- pollen transferred from Stamen to stigma on same plant



Wind pollination

insect pollination

pollination



Fertilisation

Pollen → sticky
stigma → ovary
becomes fruit

growth

Sun Rain CO_2

germination

WOW Warmth,
Oxygen Water

Seed Dispersal

explosion

animals

birds

wind

Respiration

Turns food into Energy

Glucose & Oxygen → Carbon Dioxide & Water

→ Energy


REACTIVITY SERIES
VERY REACTIVE
FAIRLY REACTIVE
NOT VERY REACTIVE
NOT AT ALL REACTIVE
Professor
Smith
Called
Me
A
Zombie
I
Left
Class
Sucking
Gum
POTASSIUM
SODIUM
CALCIUM
MAGNESIUM
ALUMINIUM
ZINC
IRON
LEAD
COPPER
SILVER
GOLD

METALS

Heat

Electricity

Conductor

Strong

Oxides formed when metals react with oxygen

Shiny

Malleable/ Ductile

Easy to shape

Alarm

Metals make a ringing sound when hit- they are SONOROUS

Metals are elements & in

Periodic Table